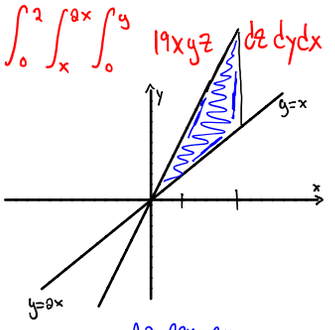
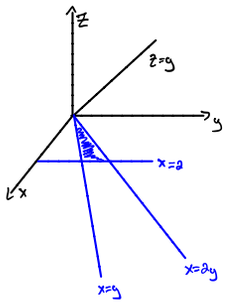
$\int_0^2 \int_x^{2x} \int_0^y 19xyz \; dz\,dy\,dx$



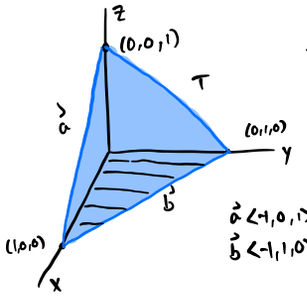


$\int_0^2 \int_x^{2x} \int_0^y 19xyz \; dz\,dy\,dx$

$\int_0^{12} \int_0^{\frac{1}{2}z} \int_x^{2x} 19xyz \; dy\,dx\,dz$

$z=3 \quad y=2x \quad x=2$
$z=0 \quad y=x \quad x=0$

15.7.3



$\iiint_T 7x^2 \; dv$

$(1,0,0)$
$(0,1,0)$
$(0,0,1)$

$\vec{a} \langle -1,0,1 \rangle$
$\vec{b} \langle -1,1,0 \rangle$

$(a_2b_3 - a_3b_2)\,(a_3b_1 - a_1b_3)\,(a_1b_2 - a_2b_1)$

$\langle -1,0,1 \rangle$
$\langle -1,1,0 \rangle$

$(0(0) - 1(1)),\ (1(-1) + 1(0)),\ (-1(1) - 0(-1))$

$\vec{a} \times \vec{b} \quad \langle -1,-1,-1 \rangle$

$\iiint_0^{-x-y+1} 7x^2 \; dv$

$\int_0^1 \int_0^{-x+1} \int_0^{-x-y+1} 7x^2 \; dz\,dy\,dx$

$\int_0^1 \int_0^{-z+1} \int_0^{-y-z+1} 7x^2 \; dx\,dy\,dz$

$-1(x-1) - 1(y-0) - 1(z-0)$

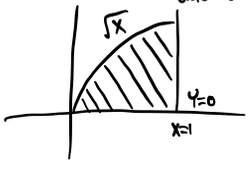
$-x+1-y-z$

$z = -x-y+1$

15.7.2

$\iiint_E 6xy \; dv$

E is region under $z = 1+x+y$
and above $z = 0$ xy plane

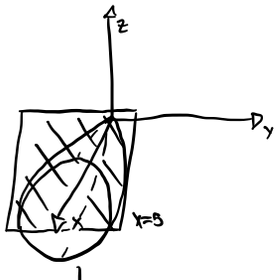


$\int_0^1 \int_0^{\sqrt{x}} \int_0^{1+x+y} 6xy \; dz\,dy\,dx$

15.7

$\iiint_E 7x \; dv$

$x = 5y^2 + 5z^2$
$x = 5$

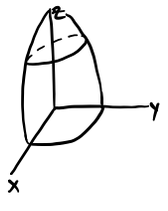


$\int_0^1 \int_0^{\sqrt{1-z^2}} \int_{5y^2+5z^2}^5 7x \; dx\,dy\,dz$

15.7.7

$f(x,y,z) = 3x^2z + 3y^2z$

$z = 9 - x^2 - y^2$
$z = 0$



$\int_0^3 \int_0^{\sqrt{9-y^2}} \int_0^{9-x^2-y^2} 3x^2z + 3y^2z \; dz\,dx\,dy$